57002

BBA 1st Semester (Old)

Examination – November

BUSINESS MATHEMATICS

Paper : BBA-102

Time : Three Hours]   [Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All question of Section 'A' are *compulsory*. Attempt any *four* questions from Section 'B' selecting at least *one* question from each Unit.

SECTION – A

1. Briefly explain and illustrate the following :

   (i) Equivalent sets.

   (ii) Intersection of two sets.

   (iii) Arithmetic mean of three numbers.

   (iv) Find the sum of first 10 natural numbers.

   (v) Factorial of a number.

(vi) Difference between permutation and combination.

(vii) Row matrix and column matrix.

(viii) dy/dx.

SECTION – B

UNIT – I

2. If $A = \{a, b, c, d, e, f\}$, $B = \{a, e, i, o, u\}$ and $C = \{m, n, o, p, q, r, s, t, u\}$, find

    (i) $A \cup B$,

    (ii) $A \cap (B \cup C)$,

    (iii) $A \cup (B - C)$,

    (iv) $C \cap (A - B)$

3. If A, B and C are three sets, prove that :

    (i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

    (ii) $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

UNIT – II

4. (a) Show that $\left(\dfrac{x^b}{x^c}\right)^a \times \left(\dfrac{x^c}{x^a}\right)^b \times \left(\dfrac{x^a}{x^b}\right)^c = 1$

   (b) Find the compound interest as Rs. 1000 for 4 years at 10% rate of interest.

5. (a) Find the sum of natural number from 1 to 100, which are exactly divisible by 5.

   (b) Insert 5 geometric mean between 5 and 320.

UNIT – III

6. (a) How many 4 digit numbers can be formed using the digits 1, 2, 3, 4, 5, 6,. 7. How many of them are greater than 3400.

   (b) If $^{2n}C_3 = {}^{2n}C_2$, find n.

7. (a) Find the middle term in the expansion of $\left(\dfrac{a}{x} + bx\right)^{12}$.

   (b) Find the term independent of x in the expansion of $\left(2x + \dfrac{1}{3x^2}\right)^9$

UNIT – IV

8. If $A = \begin{bmatrix} 2 & -3 & 1 \\ 4 & 2 & -3 \\ 1 & 0 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 2 & 1 \\ 3 & 0 & -2 \\ 2 & -3 & 1 \end{bmatrix}$ and

   $C = \begin{bmatrix} 3 & 1 & 2 \\ 2 & 3 & 1 \\ 1 & -2 & 3 \end{bmatrix}$ find the value of $2A + 3B - 2C$.

9. (a) Differentiate $(2x^2 + 3)^2(4x^3 + 2x)$ w.r.t. x

   (b) Evaluate $\int \dfrac{ax^2 + bx}{2} dx$.